Year 9 Quadratics and Parabolas - Practice Test 2

Name: _____ Date: _____

14 questions | 50 marks | 60 minutes

1. Expand and simplify. [2 marks]

(a) $(x+3)(x+5)$

(b) $(x-4)(x+2)$

2. Factorise. [3 marks]

(a) $x^2+9x+20$

(b) $x^2-7x+10$

(c) x^2+x-12

3. Factorise fully. [3 marks]

(a) $x^2 - 36$

(b) $x^2 - 10x + 25$

(c) $x^2 + 8x$

4. Solve each equation. [3 marks]

(a) $(x - 3)(x + 5) = 0$

(b) $x(x + 7) = 0$

(c) $(x + 4)^2 = 0$

5. Solve $x^2 - 6x + 8 = 0$ by factorising. Check one of your solutions in the original equation. [3 marks]

6. Solve $x^2 + 5x = 14$ by factorising. Check one solution in the original equation. [4 marks]

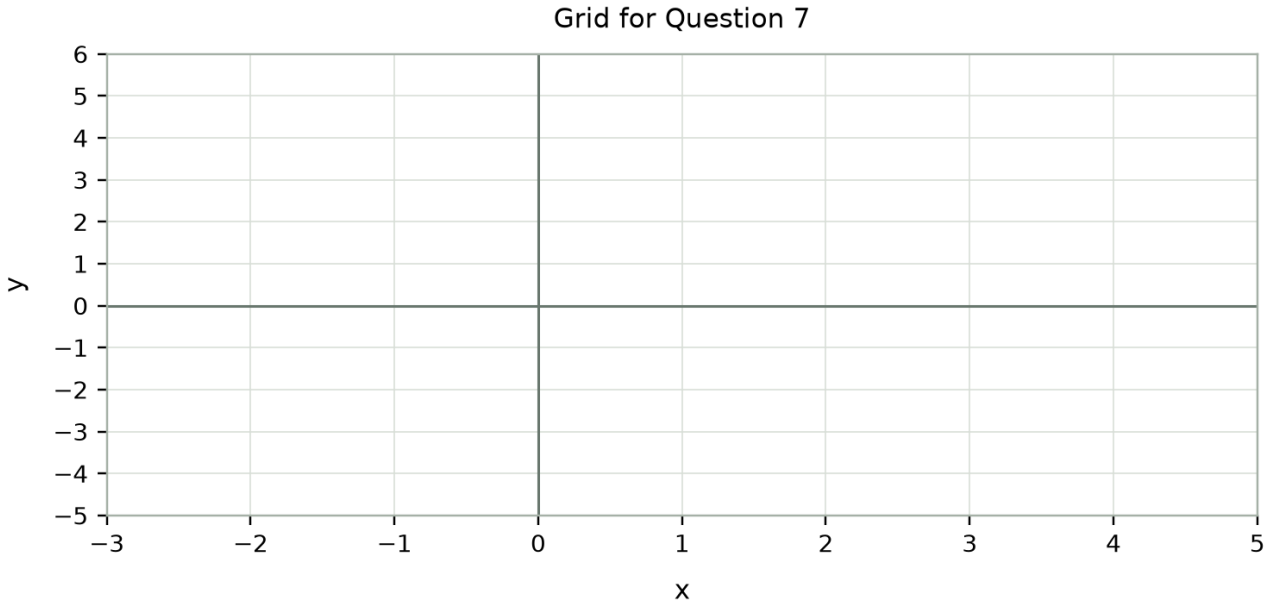
7. Use the rule $y = x^2 - 2x - 3$. [6 marks]

Values for Question 7

x	-2	-1	0	1	2	3	4
y							

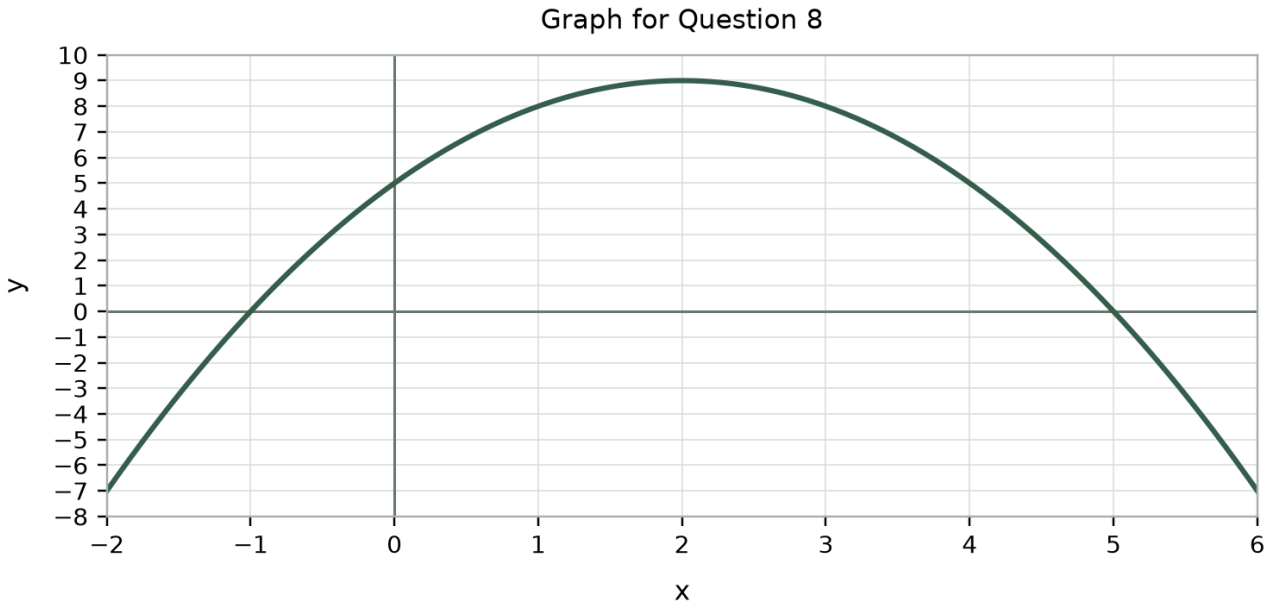
(a) Complete the table.

(b) Plot the points on the grid. Join them with a smooth curve.



(c) Write the equation of the axis of symmetry.

8. Use the graph shown. [5 marks]



(a) Write the coordinates of the turning point.

(b) Write the equation of the axis of symmetry.

(c) Write both x-intercepts as coordinates.

(d) Write the y-intercept as a coordinate.

9. A parabola has rule $y = -2(x+1)^2 + 6$. [3 marks]

(a) Write its turning point.

(b) Does it open upwards or downwards?

(c) Find y when $x = 0$.

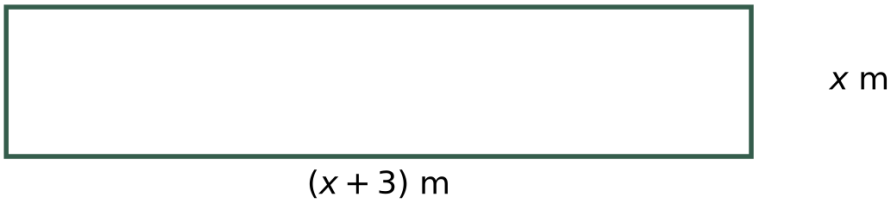
10. Two rules are $A : y = x^2 + 4x - 5$ and $B : y = (x+5)(x-1)$. [3 marks]

(a) Expand and simplify rule B.

(b) Do the two rules produce the same graph? Explain.

11. A rectangular sign is x metres wide and $(x + 3)$ metres long. Its area is 54 m^2. [5 marks]

Rectangular sign (not to scale)



(a) Write an equation for x. Rearrange it so one side is zero.

(b) Solve your equation by factorising.

(c) Give the sign's dimensions.

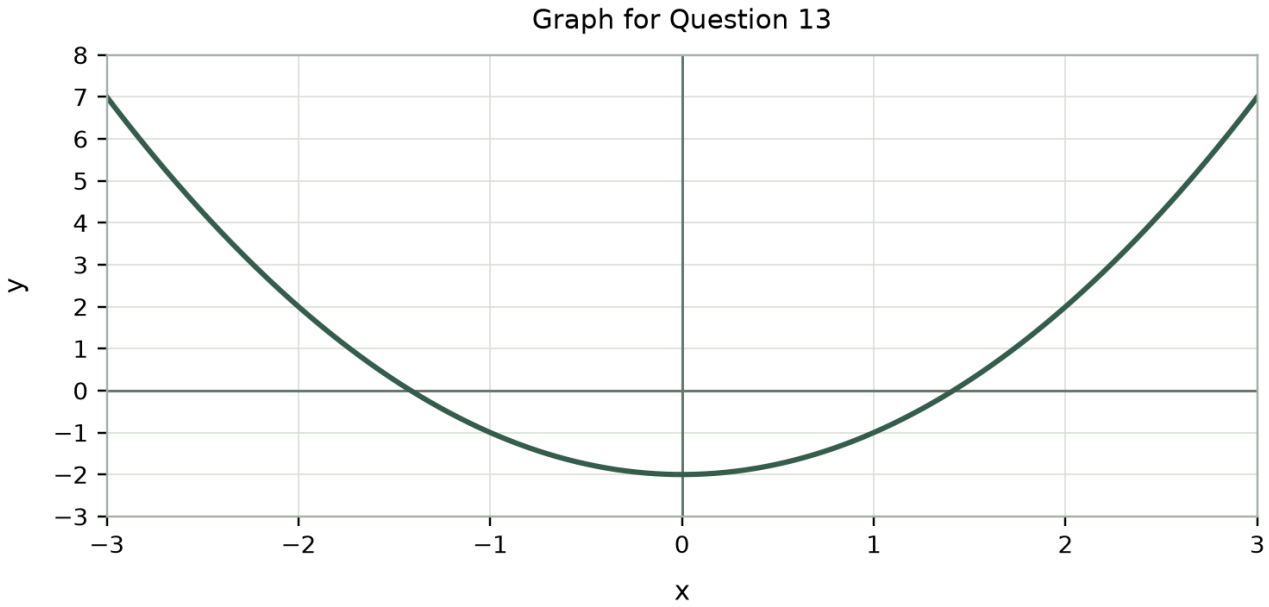
12. An arch is modelled by $h = -x^2 + 6x$, where h is the height in metres and x is the horizontal distance in metres from its left base. [4 marks]

(a) Find the height when $x = 1$.

(b) Find the distance between the two bases by setting $h = 0$.

(c) The arch is symmetric. Find its greatest height.

13. The graph shows $y = x^2 - 2$. [3 marks]



(a) Use the graph to estimate both solutions of $x^2 - 2 = 0$. Give each estimate to one decimal place.

(b) Explain why a graph reading gives an estimate.

14. Luca solves $x^2 = 5x$ by dividing both sides by x. He writes $x = 5$. [3 marks]

(a) Rearrange and factorise the original equation to find all solutions.

(b) Explain what Luca missed.